

## Book Reviews

**Risk reduction: Chemicals and energy into the 21st century.** ed. Mervyn L. Richardson, Taylor & Francis Ltd, London, 1996, 612 pp., UK£115.00. ISBN 0-7484-0398-1

The book carries introductory recommendations from the Duke of Edinburgh and Lord Lewis of Newnham, two men for whose views I usually have considerable respect. On this occasion, I cannot share their enthusiasm. The book is a compilation of papers from a wide range of authors and countries, loosely grouped under a number of headings. The Editor admits that this format may lead to some duplication of material, but this is the least of the problems.

The contributions are very variable in quality and there is a tremendous disparity in their scope. On the one hand is a very sketchy survey of the possible alternatives to fossil fuels as energy sources. On the other is a detailed account of the indirect determination of the octanol/water partition coefficient from other molecular parameters by means of empirical equations. The connection of either of these with the central theme of the book is tenuous. In fact, it is not easy to find a central theme. In the introductory matter, a clear distinction is made between 'Hazard'—the potential of a chemical to cause damage or injury—and 'Risk'—a quantification of the hazard, involving the likelihood of it occurring and the magnitude of the effect. This distinction, which is essential in any serious consideration of Risk Reduction, is neglected by many of the individual authors.

Nowhere is this more apparent than in the chapter 'Persistent Pesticide Pollutants in Crop Protection'. This is written from the perspective of a 'developing' country, Pakistan. After a cursory nod at the need for pesticides to maintain and increase food production, the authors produce a catalogue of the hazards of pesticides in the style, and with the objectivity, of one of the more extreme environmental groups. We are told, for example, that 'it is a scientifically known fact that very little of the quantity of pesticides applied to agricultural crops hits the target', and 'Packaging of pesticides is largely unsafe'. There are two brief paragraphs of vague generalities on the need to develop safer, more specific pesticides and improved methods of application, and a

rather longer, but not very coherent, account of regulatory approaches. This latter does contain some valid comments on the difficulties of drawing up and enforcing legislation in a 'developing' country, but the blame tends to be laid on venal politicians, profiteering multinationals and the willingness of developed countries to export their problems.

No-one disputes that in such countries a careful balance needs to be struck between the undoubted benefits of pesticides in improving the quality of life and the hazards that may be inherent in their use, but any discussion requires a careful analysis of the latter, why they arise, and an attempt to quantify the 'risk' element. The authors correctly say that implementation of regulations needs more resources and trained staff; where would these be best deployed in the first instance? A short list is given of cases of pesticide contamination; how did these arise, and, hence, what measures are needed to prevent or minimise them in future? The authors appear to set great store by IPM; is this really applicable to a peasant economy, and, if so, how? Only by tackling specific issues in this way is progress possible; a general polemic leads nowhere. In fairness to the authors, such an approach would need a book of its own, not a mere 42 pages.

This leads to a consideration of the book as a whole—what is its purpose and at whom is it aimed? It cannot be at the specialist; few of the contributions deal with a topic in any depth, reference lists are short and in many cases refer only to other compendium publications rather than to primary sources. On the other hand, the composition and lay-out of the volume, and the great variability in style and material content of the individual contributions, will put off the general reader. This is unfortunate, because there is valuable material here. A frequently mentioned topic is Agenda 21 adopted by the United Nations Conference on Environment and Development at Rio de Janeiro in 1992, and, in particular, Chapter 19, covering the management of toxic chemicals. There are excellent contributions giving the background and implications of this, and the regulatory approaches that are being adopted, particularly in the EU. There are also useful contributions on the practical side, in particular, two on the problems of identifying high-risk or highly susceptible individuals or groups,

and of incorporating these into risk analysis. Such contributions could have formed the basis of a useful book, drawing on material from other contributions and discussing, *inter alia*, the problems of adapting the regulatory approach of the EU and the USA to developing countries with peasant and marginal economies. Such a book would have been valuable both to those at present working in the chemical industry and to students in chemical engineering and related disciplines.

Finally, a comment must be made on the style of the contributions. The proof-reading and author-checking are, overall, of the low standard that now seems to be inevitable; in some cases the printers have used completely the wrong word, which leaves the reader floundering. This apart, some of the contributions are very well written, but others are less so. It may seem unfair to criticise authors who do not have English as their first language; in fact, many of these have done an admirable job, and others would have benefited from (and, I am sure, would have appreciated) firm editing. However, it is apparent that they would be unlikely to receive this, for the Editor's own contributions are the worst in the book in terms of style, grammar and punctuation. This is not just pedantry over split infinitives and the like; I gritted my teeth and ignored the singular nouns with plural verbs (and vice versa), the changes of tense within a sentence, the hanging participles, the subordinate clauses divorced by a distance from their subjects, although I did wonder how a non-English speaker would cope. However, a reader should not have to stop to determine what a sentence or paragraph actually means; still less should he, on occasion, have to admit defeat. In case it is felt that I am dense or hypercritical, I offer: 'There is an accelerating aspect to the global nature of these problems which is growing with the international requirement involved in the nature of our economy, which are inexorably interlinked with the vast increase in our knowledge in development in health technologies and techniques in the more adverse effects to the natural environment and methodologies in environmental toxicology.'

R. E. Ford

**The ecology of agricultural pests: Biochemical approaches**, ed. W. O. C. Symondson & J. E. Liddell, Chapman and Hall, London, 1996, 517 pp., price UK£75.00.  
ISBN 0 412 62190 8.

This most useful volume results from an international symposium held at the University of Wales Cardiff in September 1994. It consists of a series of peer-reviewed chapters which focus on the use of electrophoretic, immunological and molecular techniques for the study

of pest insect taxonomy, population genetics and population dynamics. Newer and more powerful techniques to measure and understand the interactions between pests, their hosts, predators and other organisms now significantly advance our ability to study pest insect ecology and that this subject has progressed rapidly since the previous Systematics Association Special Volume (No. 39) on the use of electrophoretic techniques, is evidenced, by the large number of chapters employing molecular biological methods. Of the 21 chapters in this volume, 10 use such methods either exclusively or in combination with other methods.

A good starting point is the very competent review by Loxdale and co-authors which examines the molecular techniques which are of use to agricultural entomologists. These include the study of ribosomal DNA (rDNA) in phylogenetic studies, as taxonomic markers and for examining population structure and dynamics, studies on restriction fragment length polymorphism (RFLP) and the use of the polymerase chain reaction (PCR). The review continues by detailing the detection of microsatellite DNA using PCR, the study of mitochondrial DNA (mtDNA) and RFLP analysis of population genetic structure, gene flow and mating systems. Perhaps most usefully of all, the review examines the use of the random amplified polymorphic DNA-polymerase chain reaction (RAPD-PCR).

A range of practical examples of the use of these techniques is presented. One of these examines the genetic relatedness of weevil strains and populations and the interactions between weevils and their endosymbionts and parasitoids. Other examples include the use of RAPD-PCR in a study of the taxonomy, distribution and ecology of slugs, the use of nuclear and mtDNA in brown planthopper taxonomy, the use of mtDNA markers in a study of the population genetics and ecology of the desert locust and the use of rDNA, PCR and RAPD-PCR in studies on introduced pests in New Zealand.

Two chapters by Hemingway *et al.* and Daly and Trowell emphasise the value of multidisciplinary approaches to the study of resistance to insecticides. Combinations of electrophoretic, immunological and molecular methods can be used in species identification, resistance detection and monitoring and studies on resistance gene flow in populations.

Almost one-third of the volume is devoted to the serological analysis of predator-prey relationships. An excellent and extensive contribution by Greenstone reviews the use of polyclonal and monoclonal antibody techniques and immunological assays including ELISA and concludes with a brief consideration of the recent developments including the use of PCR techniques. The subject is brought right up to date in a number of contributions by the two editors, Liddell and Symondson. One of these considers the use of recombinant antibody techniques as an alternative to costly and time-